

REMARKS

The Office Action dated April 4, 2008 has been received and its contents carefully noted. Claims 1-24 were pending. Claims 2 and 11-24 were withdrawn from consideration. Claims 1 and 3-8 are rejected. An objection was made to claims 9 and 10 for depending upon a rejected base claim, but these claims were indicated as being allowable if rewritten in independent form to include the limitations of their base claim. The Drawings filed on December 10, 2003 were accepted. Acknowledgement was made of a Claim for Foreign Priority. The Information Disclosure Statement(s) filed December 10, 2003 and November 13, 2006 were considered.

By this response, claims 1 and 3-10 have been amended. Namely, claims 9 and 10 have been rewritten in independent form to incorporate the limitations of claim 1, and thus, are in condition for allowance. New claims 25-28 have been added. No statutory new matter has been added. Support for all claim amendments can be found in the disclosure. Withdrawn claims 11-24 are canceled hereby.

Rejection Under 35 USC 102(b)

Claims 1, 3 and 6-8 stand rejected as being anticipated by Aikoh et al (US 6,100,913). The rejection as to claims 1, 3 and 6-8 is traversed. Applicants respectfully request withdrawal and reconsideration in view of the amended claims as well as the arguments presented herein.

Claim 1, as amended, requires that the characteristic data memory stores a “plurality of types of characteristic data”. It then requires that the drive current correction data calculator calculate its “drive current correction data for each of the plurality of LED elements” with a certain predetermined equation that includes the plurality of types of characteristic data as variables.

Aikoh does not disclose the arrangement of amended claim 1. In particular, Aikoh fails to disclose a plurality of, i.e. different, types of characteristic data, as well as restriction to a predetermined equation that includes the plural characteristic data types. Such arrangement as provided in amended claim 1 is essential for achieving high-precision drive current correction data for suppressing density non-uniformity in an image.

Applicants primarily are concerned with improving suppressed density non-uniformity in an image to improve image quality. In their present invention, the drive current of an LED is

corrected by reliance on different types of characteristic data. As explained in connection with their exemplary, preferred embodiments, such “characteristic data” include light quantity data, beam data and optical resolution data. In their preferred embodiments, current correction data, P, in the drive current correction data computing unit, 39, derives from characteristic data of a predetermined LED element to be corrected. In addition, characteristic data representing a plurality of LED elements in a predetermined range, including one particular LED element (the one to be corrected) also are used. High-precision drive current correction data, P, thereby are obtained. See para 53. Thus, Applicants correct image data with high precision.

Alternatively, Aikoh discloses a method dedicated only to correcting amounts of light emitted from LEDs to obtain uniform distribution. See cols 1-2, lines 65-2. Aikoh describes an arrangement stage wherein an amount of light emanating from the LED is measured. Subsequently, a first correction value (PO_{ave}) is obtained by calculating a median value from a maximum amount of light and a minimum amount of light. The median value is set as a first correction reference. The deviation in the measured amount of light is categorized into 8 groups, in respective lighter and darker directions, with the first correction value as a center, in order to correct intensity deviations. However, Aikoh does not disclose appropriate remedies to the problems solved by the presently claimed invention. In particular, Aikoh does not address variations in dot diameters (thickness) due to variations in the optical characteristics of the lens array. Because Aikoh’s invention only concerns data concerning the amount of light, amended claim 1 patentably distinguishes thereover. Thus, Aikoh does not anticipate, or render obvious, to one of ordinary skill in the art, amended claim 1. In view of the foregoing, Applicants respectfully solicit withdrawal and reconsideration of the rejection to claim 1.

Similarly, amended claim 3 advances the same arguments presented for claim 1 above. As such, Applicants respectfully request withdrawal and reconsideration of the rejection to claim 3.

Claim 6 as amended likewise requires storage of “a plurality of types of characteristic data”, regarding each of the plurality of LED elements. Likewise also, in order to calculate the drive current correction data for the target LED element, the drive current correction data calculator reads out a plurality of types of characteristic data regarding the target LED element. It also reads out (again a plurality of types of) characteristic data regarding each of LED elements in a predetermined range including “a target LED element” from the characteristic data memory. Then, the calculator determines the drive current correction data based on its “predetermined equation” that includes the plurality of characteristic data as variables.

Aikoh does not disclose at least the memory and the calculator of amended claim 6. As discussed above in connection with claim 1, Aikoh fails to disclose a memory storing a plurality of types of characteristic data, and a current correction data calculator that processes with such plurality of types of characteristic data (representing a target LED element). Again, these features as provided in amended claim 6 are essential in obtaining high-precision drive current correction data for suppressing density non-uniformity, the present invention patently is distinguishable.

Alternatively, Aikoh deals with characteristic data formed only by deviations in the amount of light. In order to obtain drive current correction data, the range of LED elements are fixed so as to cover all of the LED elements in the LED head, and the median value between the maximum and minimum values in the measured amounts of light is made a reference value. This reference value thus produces drive current correction data that derives only from data concerning the deviation in the amount of light. In view of the foregoing, Applicants respectfully solicit withdrawal and reconsideration of the rejection to claim 6.

Claim 7, as amended, similarly introduces “a plurality of types of characteristic data” regarding each of the plurality of LED elements. It recites the characteristic data memory for storing a plurality of types of characteristic data regarding each of the plurality of LED elements, and for storing a range average value for each of the plurality of types of characteristic data for

each of the plurality of LED elements. Similarly, the drive current correction data calculator reads the plurality of types of characteristic data, and calculates drive current correction data for the target LED element based on the plurality of types of characteristic data and the predetermined equation.

Aikoh does not disclose the features of amended claim 7. Aikoh fails to disclose the required plurality of types of characteristic data and the current correction data calculator reading out and operating on such plurality of characteristic data types.

In addition, Applicants note that the PO_{ave} used in Aikoh is not an average value, but a median value (midpoint value) between the maximum and minimum values of the entire range. Because the average value required of amended claim 7 is a mathematical average value obtained by dividing a sum of all samples by a number of samples, the claimed invention further patentably distinguishes from Aikoh. Thus, Aikoh does not anticipate or render obvious amended claim 7. In view of the foregoing, Applicants respectfully solicit withdrawal and reconsideration of the rejection to claim 7.

Claim 8, as amended, again introduces “a plurality of types of characteristic data”. It recites the drive current correction data calculator as calculating drive current correction data regarding the target LED element and an average value for each of the plurality of types of characteristic data.

Aikoh does not disclose the feature of amended claim 8. As argued above, Aikoh fails to disclose a memory storing a plurality of types of characteristic data, and a current correction data calculator calculating with such plurality of types of characteristic data. Thus, Aikoh likewise does not anticipate or render obvious claim 8. In view of the foregoing, Applicant respectfully solicits withdrawal and reconsideration of the rejection to claim 8.

Rejections Under 35 USC 103(a)

Claim 4 stands rejected as being anticipated by Aikoh et al (US 6,100,913) in view of Wong (US 2003/0007062). The rejection as to claim 4 is traversed. Applicants respectfully

request withdrawal and reconsideration in view of the amended claims as well as the arguments presented herein.

The arguments presented for claim 1 above are similarly advanced for claim 4. As such, Applicants also solicit withdrawal and reconsideration of the rejection to claim 4.

Claim 5 stands rejected as being anticipated by Aikoh et al (US 6,100,913) in view of Hamada (US 6,340,983). The rejection as to claim 5 is traversed. Applicants respectfully request withdrawal and reconsideration in view of the amended claims as well as the arguments presented herein.

Claim 5 recites that “one of the plurality of types of characteristic data is optical resolution data regarding each of the plurality of LED elements”. Neither Aikoh nor Wong disclose such. Aikoh does not disclose such type of characteristic data. Hamada likewise fails in this regard. Rather, Hamada discloses a laser-beam image recording apparatus that switches between different resolutions for printing. Resolutions of 400, 600, or 1200 dpi, as provided in Hamada, are for printing. Because the claimed invention of amended claimed 5 requires an optical resolution rather than printing resolution, claim 5 remains patentably distinguishable.

In addition, the arguments presented for claim 1 above are similarly advanced for claim 5. Thus, in view of the foregoing, amended claimed 5 is not obvious in view of the cited art. Therefore, Applicants respectfully request withdrawal and reconsideration of the rejection to claim 5.

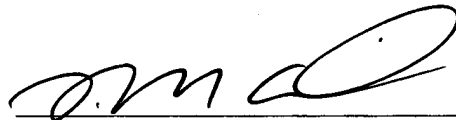
CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Therefore it is respectfully requested that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, in the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. 1.136(a), and any fees required therefore are hereby authorized to be charged to **Deposit Account No. 02-4300, Attorney Docket No. 032739 M 093.**

Respectfully submitted,
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Dated: July 2, 2008